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› Freenove RFID Starter Kit V2.0 User Manual

FREENOVE FNK0034E

Freenove RFID Starter Kit V2.0 User Manual

Model: FNK0034E | Brand: FREENOVE

INTRODUCTION

The Freenove RFID Starter Kit V2.0 is designed to introduce users to the fundamentals of electronics and programming using a control board compatible with Arduino IDE. This comprehensive kit includes a wide array of components and a detailed tutorial to guide you through various projects, from basic LED control to advanced applications like virtual instruments and games.

The kit provides all necessary parts to complete the projects outlined in the tutorial, requiring no soldering. It is suitable for beginners and those looking to refresh their knowledge in electronics and programming.

PACKAGE CONTENTS

The Freenove RFID Starter Kit V2.0 comes with 198 common items, carefully selected to support all projects in the accompanying tutorial. The kit is packaged in a durable plastic box for organized storage and transport.



	4-Band-Code				560K ±5%
	2%	5%	10%		
COLOR	1 ST BAND	2 ND BAND	3 RD BAND	MULTIPLIER	TOLERANCE
Black	0	0	0		
Brown	1	1	1	100	±1% (5)
Red	2	2	2	100	±2% (5)
Orange	3	3	3	100	
Yellow	4	4	4	100	
Green	5	5	5	100K (0)	±0.5% (10)
Blue	6	6	6	100	±0.25% (10)
Violet	7	7	7	100K (0)	±0.1% (10)
Purple	8	8	8	100K (0)	±0.05% (10)
White	9	9	9		
Gold				0.10	±5% (5)
Silver				0.010	±10% (5)

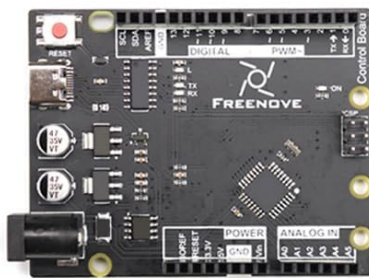
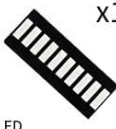
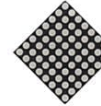
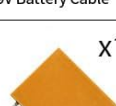
Download Needed: Tutorial and Code (No paper tutorial.)		Freenove Control Boardx1		x10		x4		x4	
									
The download link can be found on the box!				x4		x1		x1	
									
									
7-Segment Display		4-Digit 7-Segment Display		LED Matrix		Resistor-220		Resistor-1K	
									
Resistor-10K		Potentiometer		Capacitor 0.1uf					
									
Capacitor 10uf		Push Button		Big Push Button		Red Push Button Cap		Green Push Button Cap	
									
Blue Push Button Cap		Yellow Push Button Cap		Switch					
									
Vibration Switch		Keypad		Rectifier Diode		Switch Diode		NPN Transistor	
									
PNP Transistor		2X AA Battery Holder		9V Battery Cable					
									
Motor Driver Chip		Serial to Parallel Chip		Active Buzzer		Passive Buzzer		Temperature and humidity Sensor	
									
Thermistor		Photoresistor		Relay					
									
Motor		Servo		Stepping Motor		Stepping Motor Driver		Joystick	
									
Resistor Color Code Card		Infrared Receiver		Ultrasonic Ranging Module					
									
LCD Module		RFID Module		Project Board		65 Jump Wire M-M		10 Jump Wire F-M	
									
USB Cable		Plastic Box							

Image: A visual inventory of the Freenove RFID Starter Kit V2.0, showing individual components with their names and quantities, such as Red LEDs (x10), Resistor 220 (x20), and the Freenove Control Board (x1).

Key components include:

- Freenove Control Board V4 (compatible with Arduino IDE)
- Various resistors (220Ω, 1KΩ, 10KΩ)
- Multiple types of LEDs (Red, Green, Blue, Yellow, RGB, LED Bar Graph)
- 7-Segment Display and 4-Digit 7-Segment Display
- Push Buttons (Red, Green, Blue, Yellow) and Big Push Button
- Potentiometers, Capacitors, Switches
- Vibration Switch, Keypad, Rectifier Diode, Transistors (NPN, PNP)
- Battery Holders (AA, 9V), Motor Driver Chip, Buzzers (Active, Passive)
- Temperature and Humidity Sensor, Thermistor, Photoresistor, Relay
- Motors (DC Motor, Stepping Motor), Servos
- Joystick, Resistor Color Code Card, Infrared Receiver, Ultrasonic Ranging Module

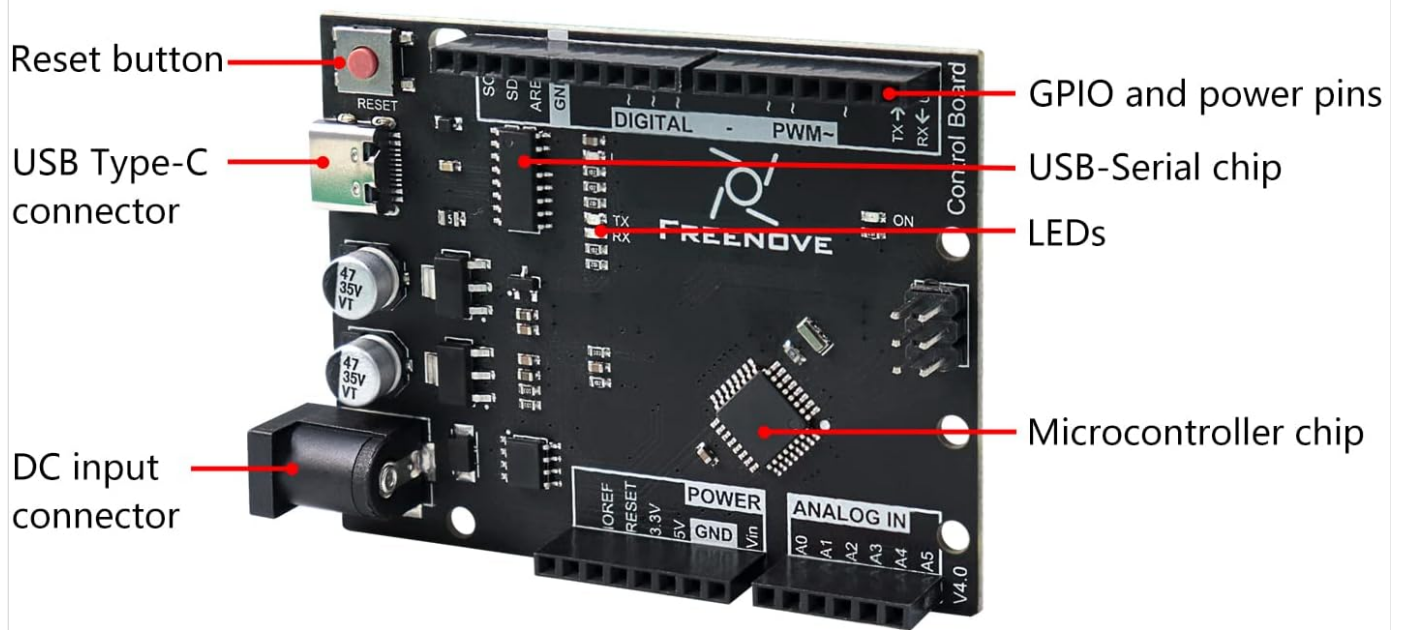
- LCD Module, RFID Module, Project Board (Breadboard)
- Jumper Wires (M-M, F-M), USB Cable, Plastic Box

CONTROL BOARD OVERVIEW

The Freenove Control Board V4 is the central component of this kit, providing the microcontroller necessary for all projects. It is designed for ease of use and high compatibility with the Arduino IDE.

Control Board V4

An easy-to-use and highly compatible control board.



Clock speed: 16MHz

Flash memory: 32KB

SRAM: 2KB

Compatible with Arduino IDE

Image: A close-up view of the Freenove Control Board V4, highlighting key features such as the Reset button, USB Type-C connector, DC input connector, GPIO and power pins, USB-Serial chip, LEDs, and the Microcontroller chip.

Key features of the Control Board V4:

- **Processor:** Atmel microcontroller with 16 MHz clock speed.
- **Memory:** 2 KB SRAM, 32 KB Flash memory.
- **Connectivity:** USB Type-C connector for programming and power, DC input connector.
- **Compatibility:** Fully compatible with Arduino IDE for programming.
- **Pins:** Digital I/O pins, PWM pins, Analog input pins, and power pins (5V, 3.3V, GND).

SETUP AND FIRST USE

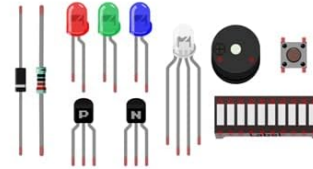
Before beginning any projects, it is essential to download the detailed tutorial and code. This kit does not include a paper tutorial. The download link for the tutorial can be found on the product box.

Detailed Tutorial

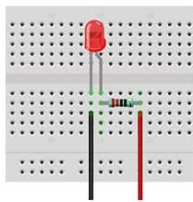
Shows you how to program the control board.

```
int i, j; // Define two variables: i and j
i = 0; // After this line is executed, i will be 0
i = 1; // After this line is executed, i will be 1
j = i; // After this line is executed, j will be 1
```

Knowledge of programming language is included.
Start by writing the first line of code.



Knowledge of electronics and components is included.
Start by lighting an LED.



```
// led on
digitalWrite(ledPin, HIGH);
delay(1000);

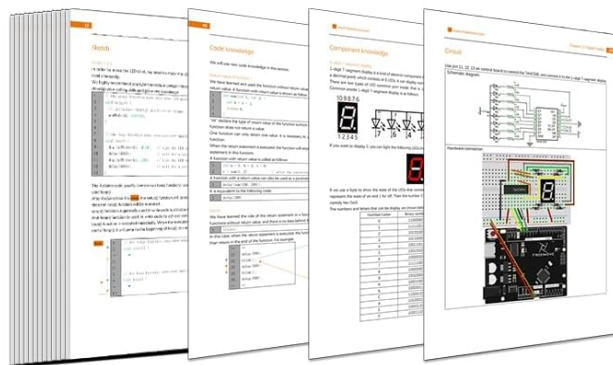
// led off
digitalWrite(ledPin, LOW);
delay(1000);
```

Dozens of interesting projects are included.
Each has a circuit diagram and verified code with description.



Feel free to contact us if you need any help.
(The contact information can be found on the box.)

Examples of tutorials:



The download link can be found on the box! (No paper tutorial.)

Image: Examples from the detailed tutorial, illustrating programming concepts with C language code snippets, circuit diagrams for connecting components, and explanations of electronic principles. It also shows a note about contacting support.

1. **Download Tutorial:** Locate the download link on the product box and download the "Tutorial.pdf" and "Processing.pdf" files. These PDFs contain all necessary instructions, circuit diagrams, and verified code.
2. **Install Arduino IDE:** If you do not already have it, download and install the Arduino IDE from the official Arduino website (www.arduino.cc/en/software). Ensure your operating system (Windows, macOS, Linux) is supported.
3. **Connect Control Board:** Use the provided USB cable to connect the Freenove Control Board V4 to your computer.
4. **Load Code:** Open the Arduino IDE, load the example code provided in the tutorial for your first project (e.g., "LED Flashing"), and upload it to the control board.
5. **Assemble Circuit:** Follow the circuit diagrams in the tutorial to connect the electronic components on the breadboard. No soldering is required; components are connected using jumper wires.

The tutorial provides step-by-step guidance for each project, ensuring a smooth learning experience.

The Freenove RFID Starter Kit V2.0 offers 49 interesting projects, ranging from basic to advanced, allowing users to progressively build their skills in electronics and programming.

Project Examples

Includes dozens of projects from simple to complex.

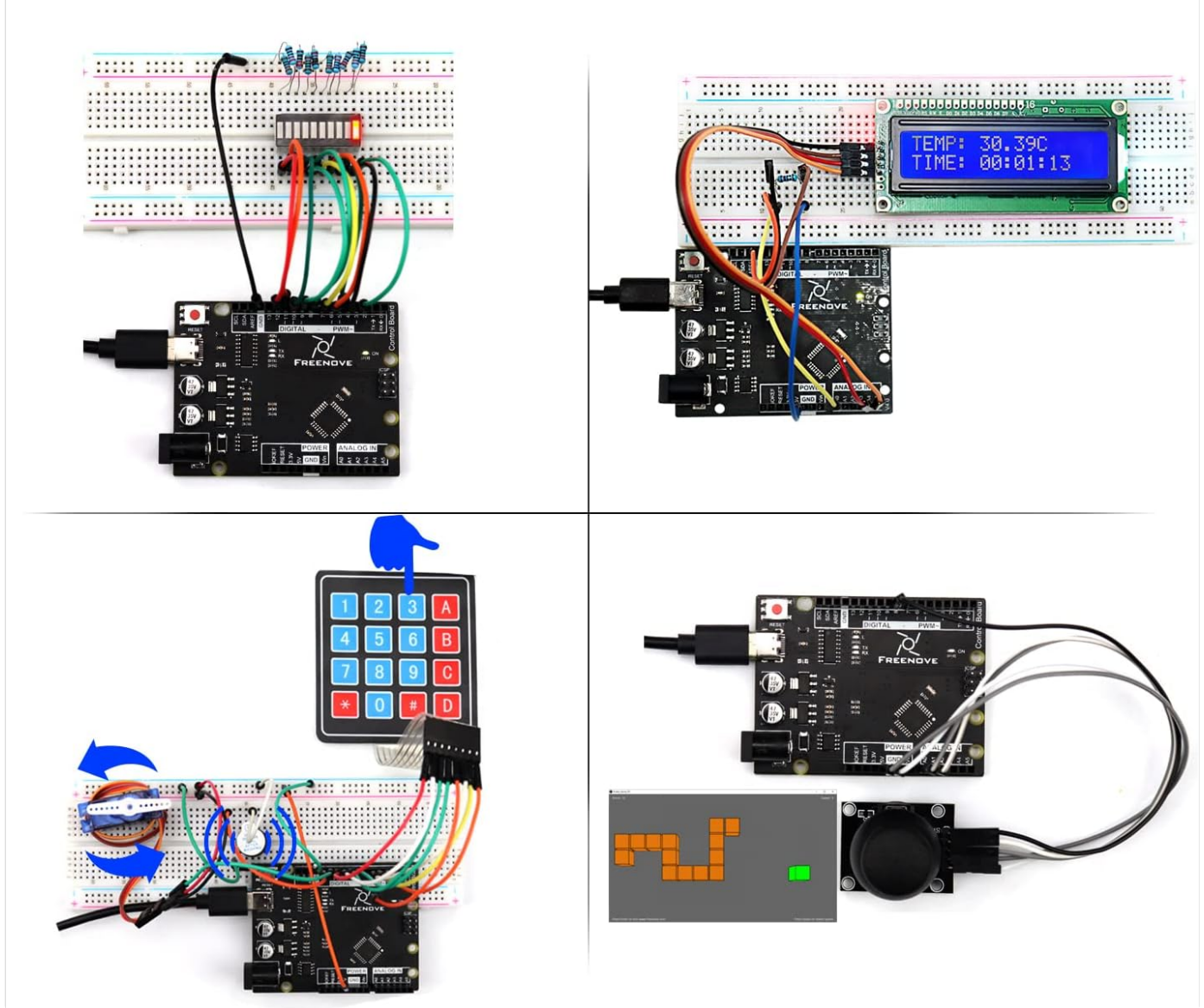


Image: A collage showing four different project examples built with the Freenove kit. These include a circuit on a breadboard with an LED, an LCD display showing temperature and time, a keypad connected to the board, and a joystick controlling a snake game on a screen. Each project in the tutorial includes:

- Detailed circuit diagrams.
- Verified C language code with explanations.
- Explanations of electronic principles and programming concepts.

Examples of projects covered:

- **Basic Projects:** LED Flashing (manual button, control board), Two LEDs flash.
- **Sensor Projects:** Temperature and Humidity Sensor, RFID (Reading UID, Reading and Writing).
- **Advanced Projects:**

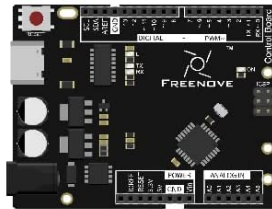
- **Virtual Instruments:** Voltmeter (single and dual channel), Oscilloscope.
- **Game Consoles:** Snake Game (2D and 3D), Pong Game (2D and 3D).

Complete Code

Includes verified code for all projects in tutorial.

C Language

C language is used for programming.
Learn C language while building projects.



Learn how to program a board
through project guidance and
code interpretation.

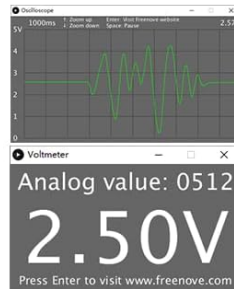


Use hardware to interact with software.
Build instruments and game consoles.

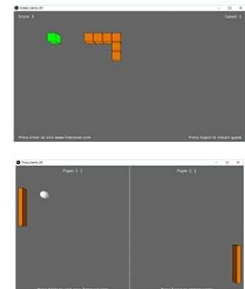
Examples of interacting with software



Projects



Instruments



Games

The download link can be found on the box! (No paper tutorial.)

Image: This image illustrates how the Freenove kit interacts with software. It shows the C language programming environment, the control board, and a laptop representing software interaction. Below are examples of projects, instruments (like a voltmeter and oscilloscope display), and games (like Snake and Pong) running on a computer screen, demonstrating the kit's capability to build virtual instruments and game consoles.

The kit encourages hands-on learning by building circuits and writing code, providing a practical understanding of electronics and programming.

MAINTENANCE AND CARE

To ensure the longevity and proper functioning of your Freenove RFID Starter Kit V2.0, follow these maintenance guidelines:

- **Storage:** Store all components in the provided plastic box when not in use. This protects them from dust, moisture, and physical damage.
- **Handling:** Handle electronic components with care. Avoid bending pins excessively, and do not apply excessive

force when inserting components into the breadboard or control board.

- **Cleanliness:** Keep the components clean and free from debris. Use a soft, dry cloth to gently wipe surfaces if necessary. Avoid using liquids or harsh chemicals.
- **Power Supply:** Always ensure the correct voltage (5 Volts) is supplied to the control board. Incorrect voltage can damage components.
- **Environmental Conditions:** Operate and store the kit in a dry environment, away from extreme temperatures and direct sunlight.
- **Component Integrity:** Periodically inspect jumper wires and other components for any signs of wear or damage. Replace any damaged parts to prevent short circuits or malfunctions.

Package

A plastic box holds all the items.



Image: The clear plastic storage box for the Freenove Starter Kit, shown with its dimensions (200mm length, 144mm width, 46mm height) and an open view revealing the organized components inside, including the control board and keypad.

TROUBLESHOOTING

If you encounter issues while using the Freenove RFID Starter Kit V2.0, consider the following troubleshooting steps:

- **Code Upload Errors:**
 - Ensure the correct board type (e.g., Arduino Uno) and COM port are selected in the Arduino IDE.
 - Verify that the USB driver for the control board is correctly installed.
 - Check the USB cable connection.
- **Circuit Not Working:**

- Double-check all wire connections against the circuit diagram in the tutorial. Ensure wires are firmly seated in the breadboard and control board.
- Verify component orientation (e.g., LEDs, diodes, polarized capacitors).
- Ensure the power supply is connected correctly and providing sufficient power.
- Test individual components if possible to identify a faulty part.

- **Component Malfunction:**

- Some components, like resistors, may have bent legs upon arrival. Gently straighten them if needed.
- If an RGB LED or other component is not working, verify its connection and the code controlling it.

- **Tutorial Discrepancies:**

- While the tutorial is detailed, minor errors can occur. Cross-reference with online resources or community forums if you suspect an error in the tutorial.

For further assistance, refer to the support section below.

SPECIFICATIONS

Feature	Detail
Brand	FREENOVE
Model Name	Freenove RFID Starter Kit V2.0 with Board V4
Item Model Number	FNK0034E
Processor	Atmel, 16 MHz
RAM	2 KB LPDDR3 (SRAM)
Flash Memory	32 KB
Operating System Compatibility	Windows, macOS, Linux
Voltage	5 Volts
Item Weight	1.17 pounds
Product Dimensions (LxWxH)	7.87 x 5.67 x 1.81 inches
Number of Items	198 common items
Projects Included	49 projects (basic and advanced)

WARRANTY AND SUPPORT

Freenove is committed to providing excellent technical support for its products. If you have any questions or encounter problems with your RFID Starter Kit V2.0, assistance is available.

- **Technical Support:** The Freenove technical support team is available to answer your questions. Contact information can typically be found on the product box or within the downloaded tutorial.
- **Tutorial Assistance:** The detailed tutorial is your primary resource for project guidance and troubleshooting. Ensure

you have downloaded the latest version.

- **Online Resources:** Visit the official Freenove website (www.freenove.com) for additional resources, FAQs, and contact options.

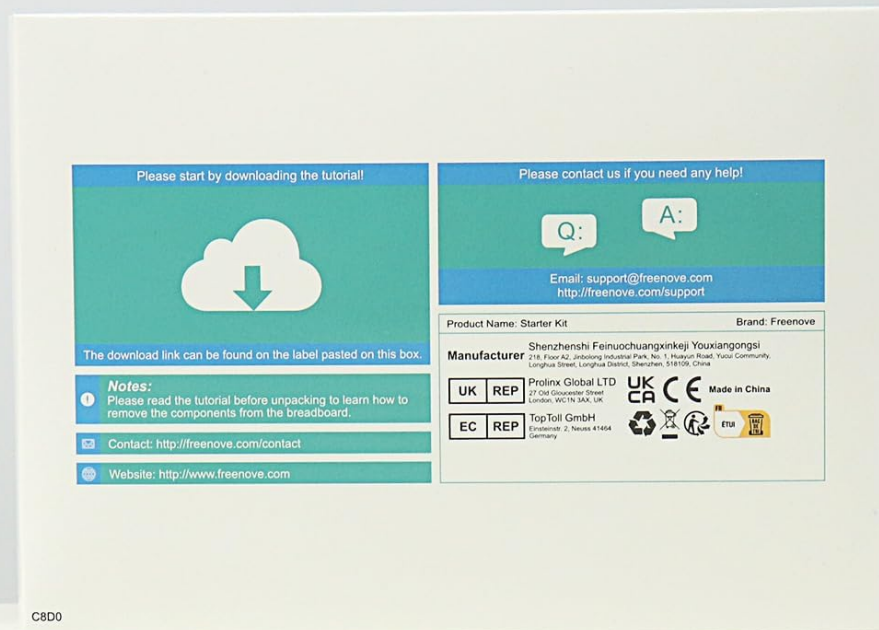


Image: The back of the Freenove Starter Kit box, displaying instructions to download the tutorial and contact information for support, including an email address and website link. It also shows regulatory marks.

While specific warranty details are not provided here, Freenove generally offers support for product functionality and issues arising from manufacturing defects. Always retain your proof of purchase.

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For the latest information and support, please visit www.freenove.com.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question

and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question

Open the live page

<https://manuals.plus/asin/B08B4JY95V>

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